

ENERGY IN THE MATERIAL SYSTEMS

1. How do scientists call the portions of Nature used to carry out experiences and measurements?
Answer: material systems, systems or bodies

ENERGY IN THE MATERIAL SYSTEMS

2. How do material systems exchange energy?
Answer: Thermal (heat) or mechanics (I)

ENERGY IN THE MATERIAL SYSTEMS

3. What is a thermal balance?

Answer:
when two systems reach the thermal balance, they have equal temperatures and cannot change

ENERGY IN THE MATERIAL SYSTEMS

What is the principle of conservation of energy?
Answer:
In an isolated system, the energy is neither created or destroyed, only it only transforms.

ENERGY IN THE MATERIAL SYSTEMS

5. JOKER: Define energy.

Answer:
The force that is needed for a material system to change from one form to another.

ENERGY IN THE MATERIAL SYSTEMS

6. What is the name of the energy determined by its movement?

Answer:
Kinetic energy.

ENERGY IN THE MATERIAL SYSTEMS

7. What is the name of the energy determined by its position that it occupies inside the gravitational terrestrial field?

Answer:
Potential energy.

ENERGY IN THE MATERIAL SYSTEMS

8. What is the name of the energy determined by the particles it is comprised of?

Answer:
Thermal energy.

ENERGY IN THE MATERIAL SYSTEMS

9. JOKER
Define centigrade.

Answer:
The heat quantity that has to be transferred to 1g of water in order for its temperature to increase by 1 °C.

ENERGY IN THE MATERIAL SYSTEMS

10. True or false?
The interval of a degree in the Kelvin scale is the same of that in the Celsius centigrade scale?

Answer: True.

ENERGY IN THE MATERIAL SYSTEMS

11. When do we say that the energy is degraded?

Answer:
When the energy has been used and it cannot be used again.

ENERGY IN THE MATERIAL SYSTEMS

12. JOKER: How many kilocalories are in 1000 Jules?

Answer:
0.24 kcal.

ENERGY IN THE MATERIAL SYSTEMS

13. True or false?
Temperature is a general property of the matter that it informs us about the state of particles.

Answer:
True.

ENERGY IN THE MATERIAL SYSTEMS

14. When warming up the end of a metallic bar and the heat propagates to rest of the bar, we say that it has warmed up for what?

Answer:
Conduction.

ENERGY IN THE MATERIAL SYSTEMS

15. What is the name given when heat spreads?

Answer:
To Radiate.

ENERGY IN THE MATERIAL SYSTEMS

16. JOKER: What is the name of the property of a material that indicates its ability to conduct heat?

Answer:
Thermal conductivity

ENERGY IN THE MATERIAL SYSTEMS

17. JOKER:

Is it possible to say that a body "has heat"? Why?

Answer:

No because it has got energy not heat.

ENERGY IN THE MATERIAL SYSTEMS

18. What points do they use as a reference for the Celsius centigrade and the Fahrenheit scales to establish their values of temperature?

Answer:

The temperatures of fusion and boiling of the water.

ENERGY IN THE MATERIAL SYSTEMS

19. How many equal parts is the Fahrenheit scale divided into?

Answer:

180.

ENERGY IN THE MATERIAL SYSTEMS

20. What unit of temperature is used in SI; °C, °F or °K?

Answer:

°K.

ENERGY IN THE MATERIAL SYSTEMS

21. What is the process called when something changes from a solid state to a gaseous state?

Answer:

Sublimation.

ENERGY IN THE MATERIAL SYSTEMS

22. JOKER: True or False?

A thermal insulator lets heat pass and prevents cold from entering

Answer:

False, the thermal insulator prevents heat and cold pass through

ENERGY IN THE MATERIAL SYSTEMS

23. What is the process called when something changes from a solid state to a liquid state?

Answer:

Melting.

ENERGY IN THE MATERIAL SYSTEMS

24. JOKER: How many °C are in 248 °F?

Answer:

120 °C.

ENERGY IN THE MATERIAL SYSTEMS

25. How many degrees Kelvin are in 27°C?

Answer:
300 °K.

ENERGY IN THE SYSTEMS

26.JOKER. How many degrees Fahrenheit are in 303 °K?

Answer:
86 °F

ENERGY IN THE MATERIAL SYSTEMS

27. What other name are "bad conductors" of the heat given?

Answer:
Isolators.

ENERGY IN THE MATERIAL SYSTEMS

28. If Baza is 212 °F, is it hot or cold? Why?

Answer:
Hot. It would be 100 °C.

ENERGY IN THE MATERIAL SYSTEMS

29. True or false?

Thermal exchange of energy between two material systems takes place providing that these are the same temperature.

Answer:
False, they must be different temperatures.

ENERGY IN THE MATERIAL SYSTEMS

30. True or false?

Chemical and Internal energy are types of mechanical energy.

Answer:
False, they are types of thermal energy.

ENERGY IN THE MATERIAL SYSTEMS

31. What is the process called when something changes from a gaseous state to a liquid state?

Answer:
Liquefaction or condensation.

ENERGY IN THE MATERIAL SYSTEMS

32.What are the names of the three types of procedures from which bodies can yield heat?

Answer:
Conduction, convection and radiation.

ENERGY IN THE MATERIAL SYSTEMS

33. What is a joule?

Answer

It is the SI unit of energy measuring heat, electricity and mechanical work. It was named after English physicist James Prescott Joule.

1 joule in everyday life is approximately the energy & work required to lift an object of 102 grams one meter straight up.

ENERGY IN THE MATERIAL SYSTEMS

34. True or false?

The Celsius Centigrade Scale is also known as The Absolute Scale.

Answer:

False, it is the Kelvin Scale.

ENERGY IN THE MATERIAL SYSTEMS

35. True or False

A calorie is the SI unit used to measure work.

Answer

False, work is measured in terms of joules. A calorie is the unit used to measure heat.

MOVEMENT AND ITS CAUSES

36. What is the name of a specific place within a system when it is occupied by something.

Answer: Position.

MOVEMENT AND ITS CAUSES

37. When the path that describes an object in movement is a parabola, the movement is called ...What?

Answer:
Parabolic.

MOVEMENT AND ITS CAUSES

38. What does displacement mean?

Answer:

The difference between the initial position and the end position of something that is mobile. It is measured in a straight line.

MOVEMENT AND ITS CAUSES

39.

MOVEMENT AND ITS CAUSES

40. JOKER What symbol is used to represent "distance travelled" with regard to movement?

Answer:
s ???

MOVEMENT AND ITS CAUSES

41. JOKER What means that all movement is relative?

Answer:

Objects move or don't move according to the system that we use as a reference.

MOVEMENT AND ITS CAUSES

42. What is the fundamental principle of the Heliocentric Model of Copernicus?

Answer:

The system whereby the Sun is the centre of the Solar System and the Earth rotates around it

MOVEMENT AND ITS CAUSES

43. Define movement.

Answer:

With regard to a system of reference that we consider to be fixed, it is the change of position that a body experiences over time.

MOVEMENT AND ITS CAUSES

44. JOKER: If two vehicles move along a road, at the same speed of 90km/h, what will be the speed of one with regard to other one? Why?

Answer:

Zero, because both will be in rest with regard to the other one.

MOVEMENT AND ITS CAUSES

45. What is the name given to a line that joins all other points of something that is mobile?

Answer:
Path

MOVEMENT AND ITS CAUSES

46. What is the name given to the difference between the initial and final position of something that is mobile?

Answer:
Crossed distance/travelled distance

MOVEMENT AND ITS CAUSES

47. True or false?

The crossed/travelled distance and the length of the path of something mobile are coincidental.

Answer: True

MOVEMENT AND ITS CAUSES

48. True or false?

Displacement is the name given to the difference between the initial and final position of something that is mobile.

Answer:
False, this is the definition for crossed/travelled distance.

MOVEMENT AND ITS CAUSES

MOVEMENT AND ITS CAUSES

50. What unit does SI use to measure velocity?

Answer:
m/s. (meters per second)

MOVEMENT AND ITS CAUSES

51. What is it called when a body resists acceleration or remains at rest or stays in straight line motion unless acted on by an outside force?

Answer:
Inertia.

MOVEMENT AND ITS CAUSES

52. What is the name of the movement that has a rectilinear path and always moves with the same velocity?

Answer:
Rectilinear Uniform Movement.

MOVEMENT AND ITS CAUSES

53. JOKER If the science teacher rides his bicycle with a velocity of 5m/s and the PE teacher also rides his bike and travels 18km in just 1h, who is the fastest?

Answer:
There is no difference between them
The two take the same one.

MOVEMENT AND ITS CAUSES

54. How can an object modify its state during rest or movement?

Answer:
Force.

MOVEMENT AND ITS CAUSES

55. What is the name given to movement whose velocity is not changeable but constant?

Answer: Uniform.

MOVEMENT AND ITS CAUSES

56. JOKER What is the name of the force with which the body and the Earth attract each other?

Answer:
Weight

MOVEMENT AND ITS CAUSES

57. What is the name of the pathway or orbit made when the planets move around the Sun?

Answer:
Elliptical.

MOVEMENT AND ITS CAUSES

58. If a person walks at a velocity of 2km/h, what distance will he have crossed after 30 minutes?

Answer:
1 km

MOVEMENT AND ITS CAUSES

60. What is the name given to movements with changeable velocity?

Answer:
Accelerated.

MOVEMENT AND ITS CAUSES

61.

MOVEMENT AND ITS CAUSES

62. True or false?

When the force acts on an object, it will change its velocity but not its path.

Answer:
False. It will also change its path.

LIGHT AND SOUND

63. What is the name of a body that does not allow the light to pass through it?

Answer:
Opaque.

LIGHT AND SOUND

64. What speed does light travel through the Universe?

Answer:
300.000 km/s.

LIGHT AND SOUND

65. JOKER: What colour will the Andalusian flag be if we illuminate it with red light?

Answer:
Black, red and black

LIGHT AND SOUND

66.

LIGHT AND SOUND

67. True or false? Light is not only seen when it moves but also when it interacts with matter.

Answer:
False. Light is not seen when it moves.

LIGHT AND SOUND

68. What is it called when light rays are produced in a multitude of directions after colliding with the surface of an object?

Answer:
Diffusion.

LIGHT AND SOUND

69. What is the name given to the body that allows light to pass through it but does not allow us to see the image clearly?

Answer:
Translucent.

LIGHT AND SOUND

70. What is it called when bodies retain photons of light.

Answer:
Absorption.

LIGHT AND SOUND

71. True or false? Colours are an invention of our brain.

Answer:
True

LIGHT AND SOUND

72. What other name is given to specular images?

Answer:
Virtual images.

LIGHT AND SOUND

73.

LIGHT AND SOUND

74. What is the name of the part of the lens where the beams of light converge?

Answer:
Area.

LIGHT AND SOUND

75. What type of lenses are in use to correct myopia?

Answer:
Divergent.

LIGHT AND SOUND

76. True or false? Photons do not have colour, but has mass.

Answer:
False, photons do not have mass.

LIGHT AND SOUND

77. What is the name given to lenses that are thinner in the centre than at its ends?

Answer:
Divergent.
Diverging

LIGHT AND SOUND

78. What shape is a biconvex lens?

Answer:

LIGHT AND SOUND

79. True or False?
A diverging lens diverges rays of light which are travelling perpendicularly to the axis point

Answer
False, rays which are travelling parallelly

LIGHT AND SOUND

80. What shape is a convex - concave lens?

Answer:

LIGHT AND SOUND

81. What is the name of a lens that modifies its curvature in order that the image in the retina remains focused?

Answer:
Crystalline.

LIGHT AND SOUND

82. What is the name of the cells in the eye that allow us to see in colour?

Answer:
Cones.

LIGHT AND SOUND

83. JOKER
Why the word AMBULANCE is written as if it was its image on ambulances?

Answer: So that drivers can read it in their rear-view mirrors.

LIGHT AND SOUND

84. What is the name of the muscle that regulates the quantity of light that passes the pupil and enters the interior of the eye?

Answer:
Iris.

LIGHT AND SOUND

85. True or false?
In hipermetropía, the image is formed behind the retina and is compensated by the convergent lenses.

Answer:
True.

LIGHT AND SOUND

86. True or false?
Sound can travel through empty spaces, however nobody can hear it.

Answer:
False, it needs some type of material to travel through.

LIGHT AND SOUND

87. What is the name of the region of the eye where images are formed?

Answer:
Retina.

LIGHT AND SOUND

88. What is the name of the condition of the eye by which the vision of the image is distorted?

Answer:
Astigmatism.

LIGHT AND SOUND

89. What is sonority?

Answer:
Energy that vibrates the source and generates a sound.

LIGHT AND SOUND

90. What other name is given to the height of a sound?

Answer:
Tone.

LIGHT AND SOUND

91. What do hertz measure?

Answer:
The number of oscillations of sound in seconds.

LIGHT AND SOUND

92. What is the name of the sound that vibrates with a high frequency?

Answer:
Sharp or Acute.

LIGHT AND SOUND

93. What allows us to differentiate between two sounds that have the same intensity and tone but come from different instruments?

Answer:
The timbre.

LIGHT AND SOUND

94. What part of the ear do we refer to when we talk about the hammer, anvil and stirrup? / Where exactly can you find the hammer, anvil and stirrup?

Answer:
Middle ear.

LIGHT AND SOUND

95. What is the name given to the set of channels coiled in the shape of snail that form a part of the inner ear?

Answer:
Cochlea.

ENERGY IN THE CHEMICAL CHANGES

96. What is the name given to the change by which a substance continues being the same one although one of its properties changes

Answer:
Physical change.

ENERGY IN THE CHEMICAL CHANGES

97. What theory explains all the chemical changes?

Answer:
Atomic Theory of Dalton and Avogadro.

ENERGY IN THE CHEMICAL CHANGES

98. What is the name of a particle formed by several atoms and which possesses different properties from each of them?

Answer:
Molecule

ENERGY IN THE CHEMICAL CHANGES

99. What element is given the symbol Pb?

Answer:
Lead.

ENERGY IN THE CHEMICAL CHANGES

100. JOKER What are the coefficients in a chemical reaction?

Answer:
The number of atoms or molecules that intervene in a reaction.

ENERGY IN THE CHEMICAL CHANGES

101. What are the names of the substances that enter a chemical reaction?

Answer:
Reagents.

ENERGY IN THE CHEMICAL CHANGES

102. What is an atom?

Answer:
The simplest particle in which matter can divide.

ENERGY IN THE CHEMICAL CHANGES

103. Adjust the following chemical reaction:



Answer:
$$\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 3\text{CO}_2 + 2\text{Fe}$$

ENERGY IN THE CHEMICAL CHANGES

104. What element is represented with the symbol Hg?

Answer:
Mercury.

ENERGY IN THE CHEMICAL CHANGES

105. True or false? Water is not a compound because its molecules are formed by different atoms.

Answer:
False. For this reason it is a compound.

ENERGY IN THE CHEMICAL CHANGES

106. JOKER. Name all the elements that form part of a chemical reaction.

Answer:

Reagents, products, coefficients, subscripts and arrow indicating the direction.

ENERGY IN THE CHEMICAL CHANGES

107. What name is given to the structure by which the atoms of an element are perfectly tidy?

Answer: Crystal.

ENERGY IN THE CHEMICAL CHANGES

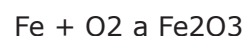
108. What name is given to the substance that is formed by atoms of the same class?

Answer:

Element.

ENERGY IN THE CHEMICAL CHANGES

109. Adjust the following chemical reaction:



Answer: $4\text{Fe} + 3\text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3$

ENERGY IN THE CHEMICAL CHANGES

110. What is a chemical equation?

Answer:

The mathematical representation of a chemical reaction.

ENERGY IN THE CHEMICAL CHANGES

111. Which is the main characteristic of an organic compound?

Answer:

It always has atoms of carbon in its molecule.

ENERGY IN THE CHEMICAL CHANGES

112. What is an endothermic reaction?

Answer:

A reaction that needs energy in order to take place.

ENERGY IN THE CHEMICAL CHANGES
113.

ENERGY IN THE CHEMICAL CHANGES

114.

ENERGY IN THE CHEMICAL CHANGES

115. What is the name of the theory that is capable of explaining everything what happens in a physical change?

Answer:
Kinetic - molecular theory.

ENERGY IN THE CHEMICAL CHANGES

116. What is the chemical symbol for Platinum?

Answer: Pt

ENERGY IN THE CHEMICAL CHANGES

117. JOKER. What is the name of the process by which molecular oxygen O₂ gives place to 2 free atoms of oxygen.

Answer: Chemical decomposition.

ENERGY IN THE CHEMICAL CHANGES

118. What is the chemical symbol of Sodium?

Answer: Na

ENERGY IN THE CHEMICAL CHANGES
119.

ENERGY IN THE CHEMICAL CHANGES

120. What are the two types of chemical reactions that balance energy?

Answer:
Exothermic and endothermic.

THE EXTERNAL ENERGY OF THE PLANET

121. It is said that a reaction of fission is when ...

Answer:
Very big and heavy atoms split.

THE EXTERNAL ENERGY OF THE PLANET

122. What is the geological agent responsible for the formation of the marine superficial currents?

Answer:
The wind.

THE EXTERNAL ENERGY OF THE PLANET

123. What name is given to the effect by which not all the radiations from the sun penetrates the terrestrial surface?

Answer:
Filter Effect.

THE EXTERNAL ENERGY OF THE PLANET

124. Arrange the different types of solar radiation energy in order from low to high: visible light, microwave and X-rays.

Answer:
Microwave, visible light and X-rays.

THE EXTERNAL ENERGY OF THE PLANET

125. JOKER What is meant by "the specific heat of the water is of $1\text{ cal / (g }^{\circ}\text{C)}$ "?

Answer: it means that it is necessary to add 1 Calorie if we want to warm 1g of water and raise its temperature by 1°C .

THE EXTERNAL ENERGY OF THE PLANET

126. What produces tides?

Answer:
The gravitational attraction of the moon and the sun on the earth.

THE EXTERNAL ENERGY OF THE PLANET

127. Explains how deep marine currents are formed.

Answer:
The difference of Temperature of the oceanic waters provokes a movement of convection between the equatorial ones and the polar ones.

THE EXTERNAL ENERGY OF THE PLANET

128. True or false?

In a nuclear reaction, atoms change their nature by turning into atoms of a different nature.

Answer:
True.

THE EXTERNAL ENERGY OF THE PLANET

129.

THE EXTERNAL ENERGY OF THE PLANET

130. What is the name to the process by which water of the oceans passes to form a part of the clouds?

Answer:
Evaporation.

THE EXTERNAL ENERGY OF THE PLANET

131. What is the other name for the tide when water is highest?

Answer:
High Tide.

THE EXTERNAL ENERGY OF THE PLANET

132. What is the main agent responsible for the hydrological cycle?

Answer:
The sun.

THE EXTERNAL ENERGY OF THE PLANET

133. What are three ways in which water can continue to flow after falling on the terrestrial surface?

Answer:
Accumulate in natural deposits, to pass on the surface or to infiltrate into the area.

THE EXTERNAL ENERGY OF THE PLANET

134. What is the name of the energy that is obtained from the wind?

Answer: Wind power.

THE EXTERNAL ENERGY OF THE PLANET

135. JOKER: From what phenomenon is water power obtained?

Answer: Water jumps.

THE EXTERNAL ENERGY OF THE PLANET
136. What name is given to the water that falls down on the terrestrial surface?

Answer:
rainfall water.

THE EXTERNAL ENERGY OF THE PLANET
137. What is the other name for animal or vegetable organic matter, from which it is possible to obtain energy?

Answer:
Biomass.

THE EXTERNAL ENERGY OF THE PLANET

138. True or false?

The energy of coal is an accumulated solar power.

Answer:
True.

THE EXTERNAL ENERGY OF THE PLANET
139.

THE EXTERNAL ENERGY OF THE PLANET

140. What is the name of the device that turns energy from the wind into electric power?

Answer:
Aerogenerator/ wind generator

CHANGES IN THE TERRESTRIAL SURFACE

141. What is the name of the soil that allows water to infiltrate easily through it?

Answer:
Permeable.

CHANGES IN THE TERRESTRIAL SURFACE

142. By what is oil formed from?

Answer:
Marine organisms.

CHANGES IN THE TERRESTRIAL SURFACE

143. What is the main organic component of soil?

Answer:
The humus.

CHANGES IN THE TERRESTRIAL SURFACE
144.

CHANGES IN THE TERRESTRIAL SURFACE
145.

CHANGES IN THE TERRESTRIAL SURFACE

146.JOKER. In descending order, what are the three zones that make a stream?

Answer
catch basin, drainage channel and alluvial cone or fan

CHANGES IN THE TERRESTRIAL SURFACE

147. What is the name of the process that transforms the sediments not consolidated in to sedimentary rocks?

Answer:
Lithification

CHANGES IN THE TERRESTRIAL SURFACE

148. JOKER What are the three basic functions of humus?

Answer:
It increases the fertility of the soil, it favours the decomposition of the rock and retains infiltrated water.

CHANGES IN THE TERRESTRIAL SURFACE

149. What name is given to the accumulations of sediments that originate in the mouth of a river?

Answer:
Delta

CHANGES IN THE TERRESTRIAL SURFACE

150. What name is given to the structures that are deposited in a specific shape when dragged by a stream?

Answer:
Alluvial cone

CHANGES IN THE TERRESTRIAL SURFACE

151. What is the name of the process that causes the breakup of rocks of the terrestrial surface in to smaller fragments without altering its composition?

Answer:
Physical Meteorization

CHANGES IN THE TERRESTRIAL SURFACE
152.

CHANGES IN THE TERRESTRIAL SURFACE

153. JOKER: What is mature soil?

Answer:
One that has developed the three types of horizons or layers (A, B and C).

CHANGES IN THE TERRESTRIAL SURFACE

154.

CHANGES IN THE TERRESTRIAL SURFACE

155. What is the name given to the quantity of water that passes the same point for a unit of time?

Answer: Flow

CHANGES IN THE TERRESTRIAL SURFACE

156. What is the name of the horizontal layers that form the sediments on having settled?

Answer:
Stratum
Strata.

CHANGES IN THE TERRESTRIAL SURFACE

157. Which of the following ones is not a mechanism of transport of material for a river: suspension, flotation, ordispersion ?

Answer: Dispersion.

CHANGES IN THE TERRESTRIAL SURFACE

158. Why is air important as a gaseous component of the soil?

Answer:
Because it contains O₂ used by the roots of the plants for grow.

CHANGES IN THE TERRESTRIAL SURFACE

159. What is the name of something that produces deposits of the products proceeding from the meteorization and erosion?

Answer:
Sedimentary basin.

CHANGES IN THE TERRESTRIAL SURFACE

160.

CHANGES IN THE TERRESTRIAL SURFACE

161. JOKER: What is responsible for the formation of a gullies, shallow rills or bad lands?

Answer: Runoff Water

CHANGES IN THE TERRESTRIAL SURFACE

162.

CHANGES IN THE TERRESTRIAL SURFACE

163. What name is given to the shallow rills or fissures produced by rain in a limy soil?

Answer
Grikes

CHANGES IN THE TERRESTRIAL SURFACE

164.

CHANGES IN THE TERRESTRIAL SURFACE

165. What is the name of the shallow runoff waters that flow with no fixed riverbed?

Answer:
Wild waters?

166.

167.

168.

169.